Remarks

Applicants have reviewed this Application in light of the Office Action sent 10 January 2008. Applicants have amended the Specification to correct a typographical error, made clarifying amendments to Claims 1-33, and added new Claims 34-39. Applicants respectfully request reconsideration and allowance of all pending claims.

Independent Claims 1, 12, and 23 are Allowable Over *Blumrich*

The Examiner rejects independent Claims 1, 12, and 23 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0103218 by Blumrich et al. (*"Blumrich"*). Applicants respectfully disagree with the Examiner.

Blumrich merely discloses a supercomputing system that includes computing nodes and I/O nodes. (Figure 5; Paragraph 0057). Each I/O node handles I/O communications to and from a subset (such as 64) of the computing nodes. (Paragraph 0065). The computing nodes and I/O nodes have 100 Mbps and Gigabit Ethernet or Infiniband ports for connecting to external Ethernet and Infiniband switches. (Figure 2; Paragraph 0065-67, 0259). An external Gigabit Ethernet swich connects the I/O nodes to a host computing system. (Figure 5; Paragraph 0066). The host computing system access the computing nodes through the external Gigabit Ethernet swich and the I/O nodes. (Figure 5; Paragraphs 0077, 0080-81). A separate external 100 Mbps Ethernet switch connects a subset of computing nodes to each other and to their I/O node. (Figure 5; Paragraphs 0057, 0066, 0079, 0146). A separate external Gigabit Ethernet or Infiniband switch connects the I/O node to an external RAID system. (Figure 5; 0067, 0081).

Blumrich divides the supercomputing system into a set of computing racks that each have two midplanes. (Figure 10; Paragraphs 0057, 0145-46). Each midplane includes 512 computing nodes, 12 link cards for accepting cables, 64 computing nodes, one or more I/O nodes for accepting Gigabit Ethernet or Infiniband connections, a clock node, and an Ethernet switch for

consolidating the 100 Mbps Ethernet links from the computing nodes. (Figure 10; Paragraphs 0057, 0145-46).

In contrast, independent Claim 1, as amended, recites:

> Software residing at one or more computer systems collectively operable to execute the software, the software comprising:
>
> a plurality of cluster agents, each cluster agent associated with one of a plurality of nodes, each node comprising a switching fabric integrated to a card and at least two processors integrated to the card, the cluster agent operable to determine a status of the associated node; and
>
> a cluster management engine communicably coupled to the plurality of nodes and operable to dynamically allocate a particular subset of the plurality of nodes to a particular job based on the determined status of each of one or more of the plurality of nodes and execute the job using the particular subset.

Independent Claims 12 and 23 recite similar limitations.

Blumrich fails to disclose, teach, or suggest each and every limitation of independent Claim 1. As an example, *Blumrich* fails to disclose, teach, or suggest *a plurality of cluster agents, each cluster agent associated with one of a plurality of nodes, each node comprising a switching fabric integrated to a card and at least two processors integrated to the card, the cluster agent operable to determine a status of the associated node*, as independent Claim 1 recites. Even assuming for the sake of argument the computing or I/O nodes in Blumrich could be properly considered a plurality of nodes, as independent Claim 1 recites, Blumrich would still fail to disclose, teach, or suggest *a plurality of cluster agents, each cluster agent associated with one of a plurality of* computing or I/O nodes, *each* computing or I/O node *comprising a switching fabric integrated to a card and at least two processors integrated to the card, the cluster agent operable to determine a status of the associated* computing or I/O node, as independent Claim 1 recites. Instead, the compute and I/O nodes in *Blumrich* have only Ethernet or Infiniband ports and rely on external 100 Mbps Ethernet swtiches and an external Gigabit Ethernet switch to communicate with each other and with the host computing system in *Blumrich*.

"To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim." *Brown v. 3M*, 265 F.3d 1349, 1351 (Fed. Cir. 2001). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987); M.P.E.P. ch. 2131 (Rev. 3, Aug. 2005) (quoting *Verdegaal*, 814 F.2d at 631). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the patent claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989); M.P.E.P. ch. 2131 (Rev. 3, Aug. 2005) (quoting *Richardson*, 868 F.2d at 1236). Furthermore, "[t]he elements must be arranged as required by the claim." M.P.E.P. ch. 2131 (Rev. 3, Aug. 2005) (citing *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990)). As shown above, *Blumrich* fails to disclose, either expressly or inherently, each and every limitation of independent Claim 1. Therefore, *Blumrich* does not anticipate independent Claim 1 under governing Federal Circuit case law and the M.P.E.P.

For at least these reasons, independent Claims 1, 12, and 23 are allowable over *Blumrich*. Applicants respectfully request reconsideration and allowance of independent Claims 1, 12, and 23 and all their dependent Claims.

New Independent Claims 37-39 are Allowable Over *Blumrich*

Applicants have added new independent Claims 37-39. Applicants respectfully submit new independent Claims 37-39 are allowable over *Blumrich*.

New independent Claim 37 recites:

Software residing at one or more computer systems collectively operable to execute the software, the software comprising:

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a plurality of cluster agents, each cluster agent associated with one of a plurality of nodes, the cluster agent operable to determine a status of the associated node, each node comprising:

at least two first processors integrated to a first card and operable to communicate with each other via a direct link between them; and

a first switch integrated to the first card, the first processors communicably coupled to the first switch, the first switch operable to communicably couple the first processors to six or more second cards each comprising at least two second processors integrated to the second card and a second switch integrated to the second card operable to communicably couple the second processors to the first card and at least five third cards each comprising at least two third processors integrated to the third card and a third switch integrated to the third card;

the first processors being operable to communicate with particular second processors on a particular second card via the first switch and the second switch on the particular second card;

the first processors being operable to communicate with particular third processors on a particular third card via the first switch, a particular second switch on a particular second card between the first card and the particular third card, and the third switch on the particular third card without communicating via either second processor on the particular second card; and

a cluster management engine communicably coupled to the plurality of nodes and operable to dynamically allocate a particular subset of the plurality of nodes to a particular job based on the determined status of each of one or more of the plurality of nodes and execute the job using the particular subset.

New independent Claims 38-39 recite similar limitations.

Blumrich fails to disclose, teach, or suggest each and every limitation of new independent Claim 37. As an example, *Blumrich* fails to disclose, teach, or suggest *a plurality of cluster agents, each cluster agent associated with one of a plurality of nodes, the cluster agent operable to determine a status of the associated node, each node comprising: at least two first processors integrated to a first card and operable to communicate with each other via a direct link between them; and a first switch integrated to the first card,* as new independent Claim 37 recites. Even assuming for the sake of argument the computing or I/O nodes in Blumrich could be properly considered a plurality of nodes, as new independent Claim 37 recites, Blumrich

would still fail to disclose, teach, or suggest *a plurality of cluster agents, each cluster agent associated with one of a plurality of* computing or I/O nodes *the cluster agent operable to determine a status of the associated* computing or I/O node, *each* computing or I/O node *comprising: at least two first processors integrated to a first card and operable to communicate with each other via a direct link between them; and a first switch integrated to the first card,* as new independent Claim 37 recites. Instead, as discussed above, the compute and I/O nodes in *Blumrich* have only Ethernet or Infiniband ports and rely on external 100 Mbps Ethernet swtiches and an external Gigabit Ethernet switch to communicate with each other and with the host computing system in *Blumrich*. Therefore, *Blumrich* does not anticipate new independent Claim 37 under governing Federal Circuit case law and the M.P.E.P.

For at least these reasons, new independent Claims 37-39 are allowable over *Blumrich*. Applicants respectfully request allowance of independent Claims 37-39.

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Conclusion

For at least the foregoing reasons, Applicants respectfully request allowance of all pending claims.

If a telephone conference would advance prosecution of the Application, the Examiner may call Travis W. Thomas, Attorney for Applicants, at 650.739.7503.

Please charge $630.00 for three additional independent claims, $300.00 for six additional claims total, and $1,050.00.00 for a three-month extension of time to Deposit Account No. 02-0384 of Baker Botts L.L.P. The Commissioner may charge any fee due and credit any overpayment to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

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